

# Notice of Allowability

Application No.

10/780,714

Examiner

Anastasia Midkiff

Applicant(s)

TAKIKAWA ET AL.

Art Unit

2882

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Applicant Amendment filed 23 February 2007.
2. ☒ The allowed claim(s) is/are 1-3, 5, 8-14 and 16-20.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All b) ☐ Some\* c) ☐ None of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

## Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date \_\_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date \_\_\_\_\_
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_

ASM *ASM* 3/10/07

## **DETAILED ACTION**

### **EXAMINER'S AMENDMENT**

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Richard E. Fichter, Reg. No. 26,382, on 15 March 2007.

The application has been amended as follows:

#### **IN THE CLAIMS:**

Cancel Claims 6 and 7.

#### ***Allowable Subject Matter***

Claims 1-3, 5, 8-14, and 16-20 are allowed.

The following is an examiner's statement of reasons for allowance:

With respect to Claim 1, the prior art of record teaches many of the elements of the claimed invention, including a carbon substance comprising: a plurality of structures, each having a diameter ranging from about 1  $\mu\text{m}$  to about 100  $\mu\text{m}$  and including carbon and a metal or metallic oxide; one or more line-shaped bodies whose diameters are

smaller than 200  $\mu\text{m}$ ; wherein the line-shaped bodies include carbon as a main component thereof and grow radially from the surfaces of the structures.

However, prior art fails to teach or fairly suggest the substance wherein the structure has a curved shape of a sphere, hemisphere, ellipse, or half ellipse, in the manner required by Claim 1.

With respect to Claims 2 and 5, the prior art of record teaches many of the elements of the claimed invention, including a carbon substance comprising: a plurality of structures, each having a diameter ranging from about 1  $\mu\text{m}$  to about 100  $\mu\text{m}$  and including carbon and a metal or metallic oxide; one or more line-shaped bodies whose diameters range from about 50  $\mu\text{m}$  to about 1  $\mu\text{m}$ , wherein the line-shaped bodies include carbon as a main component thereof and grow from the surfaces of the structures; and wherein the line-shaped bodies include at least one body starting from and returning to a same structure.

However, prior art does not teach or fairly suggest the carbon substance wherein at least parts of the line-shaped bodies connect two or more separate structures, in the manner required by Claim 2.

Claims 3, 8-14, and 16-20 are allowable by virtue of their dependency upon Claims 1, 2, and 5.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent to Osawa (US 6,692,718 B1) regarding spherical carbon nanostructures, but without additionally comprising a metal or metallic oxide, and wherein the spherical shape depends upon the structures being fullerenes composed only of carbon.

U.S. Patent Application Publication to Okai et al. (US 2004/0046755 A1) regarding nanotube structures annealed to granular substrate used for an electron emitter, but without nanotubes that grow radially from a structure.

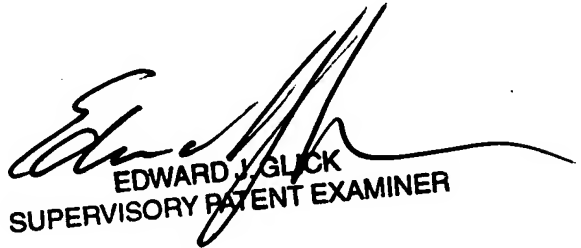
U.S. Patent documents to Den et al. (US 6,628,053 B1 and US 2003/0197456 A1) regarding electron emitters with a spherical substance upon which carbon nanotube grow radially there from, but wherein the structure is composed solely of known metal-only catalysts, without carbon.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anastasia Midkiff whose telephone number is 571-272-5053. The examiner can normally be reached on M-F 7-4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Glick can be reached on 571-272-2490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

ASM  
3/16/07

  
EDWARD J. GLICK  
SUPERVISORY PATENT EXAMINER